REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

In the present application, Claims 9-18 are active. Claims 1-8 have been cancelled by a previous amendment. In the present Amendment, new Claims 16-18 are added without introducing any new matter.

In the December 26, 2009 Office Action, Claims 9 and 12 were rejected under 35 U.S.C. § 103(a) as unpatentable over Narutaki et al. (U.S. Patent No. 6,624,860, hereinafter "Narutaki") in view of Nakamura et al. (U.S. Patent No. 6,005,646, hereinafter "Nakamura") and further in view of Hirai et al. (U.S. Patent No. 6,122,021, hereinafter "Hirai"); Claims 10 and 13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Narutaki in view of Nakamura and Hirai and further in view of Kawana et al. (U.S. Patent Publication No. 2004/0218115, hereinafter "Kawana"); Claims 11 and 14 were rejected under 35 U.S.C. § 103(a) as unpatentable over Narutaki in view of Nakamura and Hirai and further in view of Miyachi et al. (U.S. Patent No. 6,493,053, hereinafter "Miyachi"); and Claim 15 was rejected under 35 U.S.C. § 103(a) as unpatentable over Narutaki in view of Nakamura and Hirai and further in view of Miyachi.

In response to a Request for Reconsideration filed under 37 C.F.R. § 1.116 that was filed on April 27, 2009, and Advisory Action issued on May 21, 2009, upholding the rejection of the December 26, 2009 Office Action.

Moreover, new Claims 16-18 are added. New Claims 16-18 depend upon independent Claims 9, 12, and 15, respectively, and recite features related to the maximum voltage for the blue pixel electrode. These features find non-limiting support in Applicants' disclosure as originally filed, for example in page 23, lines 15-24. No new matter has been added.

Regarding the rejection of Applicants' independent Claim 9 under 35 U.S.C. § 103(a) as unpatentable over Narutaki in view of Nakamura and Hirai, Applicants respectfully traverse the rejection. In particular, the combination of the references Narutaki, Nakamura and/or Hirai, taken in any proper combination, fail to teach all the features of Applicants' independent Claim 9, as next discussed.

Briefly summarizing, Applicants' independent Claim 9 is directed to a liquid display device. The device includes, *inter alia*, a liquid crystal display cell, including:

> a voltage supplying source supplying the voltage applied to the blue pixel electrode in black display being different from the voltages applied to the red and green pixel electrodes in black display, and the voltage of the blue pixel electrode in black display being set to a voltage making the v' value of the u' v' chromaticity diagram become the maximum.

(Claim 9, portions omitted.) As described by way of non-limiting example on page 4 of Applicants' specification, if the same black display voltage is applied to a red, green and blue pixel, the blue color predominates on the display screen due to the effect of wavelength dispersion. (Specification, p. 4, and from p. 10, l. 26, to p. 11, l. 11.) Because the blue light of short wavelength, for example below 490 nm, is greatly affected by the wavelength dispersion, a display image tends to show a stronger blue color when displaying a black image. (Specification, p. 4, ll. 12-18, p. 12, ll. 7-17, Figs. 12-14.) Accordingly, a feature of Applicants' independent Claim 9 provides that the voltage applied to a blue pixel electrode in a black display has a different voltage than that which is applied to a red and a green pixel electrodes in black display, and thereby can allow that the voltage being applied to the blue pixel electrode at the time of a black display to be controlled independently. Thus, an advantage of Applicants' invention as recited in independent Claim 13 is that by applying a voltage setting in accordance with chromaticity, color balance can be regulated by compensating the light leaking from the blue filter with other colors. Please note that the

above discussion is provided for explanatory purposes only, and shall not be used to limit the claims in any fashion.

Turning now to the applied references, Narutaki is directed to a semi-transmissive type liquid-crystal display (LCD), has describes a color filter structure with a bright and high chromaticity property using both a reflection type LCD *and* a transmission type LCD. (Narutaki, Abstract, col. 5, ll. 3-13, Fig. 31B, Figs. 6a and 6b.) Narutaki explains with his Figure 24, by showing a chromaticity diagram that represents the R, G, and B color temperatures, that the respective x-y plot with R, G, and B colors of the chromaticity diagram is poor, because the combined reflection-type LCD and transmission type LCD use different color filters with different characteristics. (Narutaki, col. 31, ll. 23-59, Fig. 24.) In particular, as supported by Narutaki's Tables 1-3, it is shown that the colors appear differently between the reflection-type and transmission-type pixels due to differences in color filters. (Narutaki, col. 30-31, Tables 1-3.)

Moreover, to compensate for this effect between the reflection-type LCD and the transmission-type LCD, Narutaki suggests to use a color filter region that has characteristics that are suitable for *both* the reflection-type LCD and the transmission-type LCD. (Narutaki, col. 31, ll. 60-65.) A solution for such color filter is shown in Narutaki's Figures 20-21, where a color filter layer 11 and a transparent counter electrode 4 is provided. (Narutaki, col. 32, ll. 8-20.) In addition, Narutaki explains the following:

> By adjusting the voltage applied to the liquid crystal layer 5 which is located between the transparent electrode 4 and the reflective electrode 3 and the transparent electrode 8, the quantity of light to be transmitted through the polarizing plate 6 after being reflected from the reflective electrode 3 can be adjusted, whereby a gray-level display can be achieved.

(Narukati, col. 33, ll. 16-22, Figs. 20-21.) The pending Office Action asserted that Narutaki teaches "the voltage of the blue pixel electrode in black display being set to a voltage making the v' value of the u' v' chromaticity diagram become the maximum," as recited in

Applicants' Claim 9. (Office Action, p. 3, ll. 20-22, pointing to Narutaki's Fig. 24). Applicants respectfully disagree.

As discussed above, Narutaki merely explains with his Figure 24, that the chromaticity can be poor, by showing a divergence of the R, G, and B values between the reflective color filter *and* the transmissive color filter. (Narutaki, Fig. 24, col. 11, ll. 33-38.) There is no showing in Narutaki of the a setting of a pixel, so that the v' value becomes maximum, as required by Applicants' Claim 9. Nor is there any explanation or discussion in Narutaki that a voltage that drives a pixel electrode of the blue color can be used for this purpose. Narutaki is interested in solving his color-dispersion problem by using appropriate color filters, and only mentions that the pixel voltage can be adjusted to change the quantity of light, as discussed above.

The applied reference Hirai, used by the pending Office Action to form the 35 U.S.C. § 103(a) rejection, fails to remedy the deficiencies of Narutaki, even if we assume that the combination is proper. Hirai is directed to a LCD that can reduce image-sticking, when the transmittance during the increase of a pixel voltage is different from that during the decrease of voltage (Hirai, Abstract, col. 2, ll. 25-29.) Hirai explains in a comparative example that a projection-type LCD generally has a reddish picture, that was especially remarkable at a lower voltage level. (Hirai, col. 37, ll. 53-57.) Hirai gives the following reasons for this "reddish" picture:

> It is considered that this was caused by the fact that the threshold voltage characteristics of the liquid crystals are different for red, green and blue, and examination of applied voltage-transmittance characteristics for red, green and blue revealed that, at a middle voltage level, the transmittance was highest with red and lowest with blue at the same applied voltage.

(Hirai, col. 37, ll. 57-63.) To remedy this problem of a "reddish" picture, Hirai suggests to either use thinner color filters for the blue color, (Hirai, col. 38, ll. 1-7, 3.6 μm for red, 2.9 μm for green, and 2.3 μm for blue) or by using a blue pixel with the shortest electrode

distance by varying the thickness of the color filters. (Hirai, col. 40, ll. 49-58, 12 μm for red, 11 μm for green, and 10 μm for blue pixels).

The pending Office Action asserts that Hirai teaches "a voltage applied to a blue pixel electrode in black display is different from the voltages applied to red and green pixel electrodes in black display," as required by Applicants' independent Claim 9. (Office Action, p. 4, ll. 10-12.) Applicants respectfully disagree. Hirai merely mentions that there may be different *threshold* voltage characteristics with pixels of different colors, as discussed above. But Hirai, as a fact, does neither teach nor suggest that a voltage applied to a blue pixel electrode in black display is different from the voltages applied to red and green pixel electrodes in black display. As discussed above, Hirai attempts to remedy the problem with the "reddish" picture by using color filters of different thicknesses. (Hirai, col. 38, ll. 1-7, Fig. 4.) Arguably Hirai may have discovered that the picture appears to be too red, in light of a weak blue color appearance, but Hirai clearly does not suggest a solution that corrects this problem by changing the voltage supplied to the blue pixel.

The cited passages of the reference Nakamura, used by the pending Office Action to form the 35 U.S.C. § 103(a) rejection of independent Claim 9, fails to remedy the deficiencies of Hirai and/or Narutaki, even if we assume that the combination is proper. Therefore, even if the combination of Narutaki, Nakamura and/or Hirai is *in arguendo* combined, the cited passages of the combination fails to teach every element of Applicants' Claim 9. Accordingly, Applicants respectfully traverse, and request reconsideration of this rejection based on these references.

Analogously to the traversal of the rejection of Applicants' independent Claim 9, Applicants also respectfully traverse the rejection of independent Claim 12 under 35 U.S.C. § 103(a).

Independent Claim 12 is directed to a liquid crystal display device, that requires *inter alia*:

> a voltage supplying source supplying the voltage applied to the blue pixel electrode in black display being different from the voltages applied to the red and green pixel electrodes in black display, and the maximum voltage of the blue pixel electrode being set to a voltage making the Z value of the XYZ stimulus value become the minimum.

(Claim 12, portions omitted.) Narutaki merely uses the term "XYZ stimulus value" in his specification at column 30, lines 17-41, with reference to a discussion that the Y value of the X, Y, and Z values represents the brightness as perceived by human eyes. (Narutaki, col. 30, ll. 32-34, Fig. 24.) However, Narutaki's Figure 24 illustrates nothing but the x and y value indicating the chromaticity of each color, as shown in Tables 1-3. Narutaki is entirely silent on the setting of a blue pixel voltage based on a Z value of the XYZ stimulus value, as required by Applicants' independent Claim 12. As a fact, Narutaki does not even explain what the Z value of the XYZ stimulus value represents.

The references Nakamura and Hirai, taken in any proper combination with Narutaki, fail to remedy the above-discussed deficiencies of Narutaki. Therefore, for substantially the same reasons as discussed with regard to Claim 9, it is respectfully submitted that the rejection of independent Claim 12, and the rejections of dependent Claims 13-14 dependent therefrom, is believe to be overcome in light of the teachings of Narutaki, Nakamura, and/or Hirai.

Independent Claim 15, while differing in scope from Claim 1, patentably define over Narutaki, Nakamura, Hirai, and Miyachi for substantially the same reasons as Claims 9 and 12. For example, Applicants' Claim 15 recites "the voltage of the blue pixel electrode in black display being set to a voltage making the v' value of the u' v' chromaticity diagram become the maximum." Accordingly, it is respectfully submitted that Narutaki, Nakamura,

Hirai, and Miyachi do not anticipate or render obvious the features of independent Claim 15. Therefore, independent Claim 15 is believed to patentably define over the applied references.

Consequently, in view of the present Request for Reconsideration, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 9-18 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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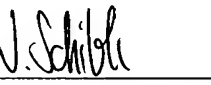
MAIER & NEUSTADT, P.C.



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